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III. *Captain Langford's Observations of his own Experience upon Huricanes, and their Prognosticks. Communicated by Mr. Bonavert.*

IT hath been the Custom of our *English* and *French* Inhabitants of the *Caribee Islands*, to send, in about the Month of *June*, to the Native *Caribees* of *Dominico* and *St. Vincent*, to know whether there would be any Huricanes that Year ; and about Ten or Twelve Days before the Hurricane came, they did constantly send them Word ; and it very rarely or seldom failed, that ever I had Experience of , but the Inhabitants have pretended that sometimes they did fail in their Prognosticks, or rather in their Witchcrafts or Council with the Devil, as they call'd it. But I hope I shall, in the ensuing Discourse, both clear the Natives of that Aspersiion in this Matter ; and likewise shew some certain Reasons, back'd with Experience, that seldom, or never as yet, those Prognosticks have failed, as I have observed in Five Huricanes ; One in the Year 1657. the others in *Anno* 1658, and 1660. and 1665, and 1667. Two of which I was at Sea in, without any Prejudice to my Ship, Mafts, Sails, or Rigging ; I always fitting my Ship for such a Storm, which I could give good Reasons for, but I shall be too tedious ; so I shall only divide what I have to say, into these Four Parts :

1. How I came to the Knowledge of these Signs or Prognostications.

2. What they are.

3. The

3. The Experience I have had by foretelling of Hurricanes, and the Benefit my self and others have received thereby.

4. And *Lastly*, Additional Reasons of the Cause of the Hurricanes and their Bounds.

First, How I came to the Knowledge of the Signs or Prognosticks of the Hurricanes.

In the Year 1657. I, With Three Merchant-men bound for *Nevis* and *Jamaica*, came under the Island *Dominico*, where I had need to take in Provision for Cattel; but knowing the great hatred the Natives had against our Nation, (except his Highness Prince *Rupert*) notwithstanding all the Means the Governors of those Islands had used to the contrary, I was forc'd to put up *Holland* Colours, and by that Means drew Three of the *Indians* aboard me, and by the civil Entertainment I gave them, overcame so much their Jealousies of our being *English*, that returning a Shore, they brought with them a considerable Number of Men, Women, and Children; furnishing me with the things I wanted: And many of the Men staying with me all Night, where the Entertainment we gave them, undeceived them so much of the ill Opinion they had of our Nation, that when in the End they discovered us to be *English*, in Return to our Civilities, they promised to send some of their chiefest Families after me to *Nevis*, to conclude a firm Peace with us. And to that purpose they left me Three Hostages. And when the rest, that followed me, were, by one *Courtman*, a Master of a Ship, intercepted in order to make them Slaves, I prevailed with the Governor of *St. Christophers*, who, considering the end they came

came for, set them free; and to the Peace with them was concluded, and some Years after ratified by my Lord *Willoughby*.

The Civilities I used towards them, on these and other Occasions, made one of the Three Hostages resolve to remain with me, which he did for Four Years, and to come over into *England* with me, where shortly after he died.

And from this *Indian* I had their Way of fore-telling the Hurricanes Fourteen Days before they come.

Signs or Prognosticks of Hurricanes.

1. **A**LL Hurricanes come, either on the Day of the Full, Change, or Quarters of the Moon.

2. If he will come on the Full Moon, you being in the Change, then observe these Signs:

That Day you will see the Skies very turbulent, the Sun more red than at other times, a great Calm, and the Hills clear of Clouds or Foggs, over them, which in the high Lands are seldom so. Likewise in Hollows, or Concaves of the Earth, or Wells, there will be a great Noise as if you were in a great Storm, and at Night the Stars looking very big with Burrs about them, and the North West Sky very black and foul, the Sea smelling stronger than at other times, as usually it doth in great Storms; and sometime that Day, for an Hour or Two, the Wind blows very hard Westerly, out of his usual Course.

On the Full of the Moon you have the same Signs, but a great burr about the Moon, and many times about the Sun.

The like Signs must be taken notice of on the Quarter Days of the Moon ; in the Months of *July*, *August*, and *September* ; for the Hurricanes come in those Months ; the soonest that ever I heard of was the 25th of *July*, and the latest was the 8th of *September* ; but the usual Month they come in is *August*.

3. *Thirdly*, the Benefit and Experience I have had of foretelling these Hurricanes is, that whereas heretofore they were so dreadful, that all Ships were afraid to go to Sea, and did rather choose to stay in the Roads at Anchor, than to run the hazard of the merciless Sea, although never Ship escaped at Anchor, but was cast a-shore ; many times, by the Violence of the Storm, some Vessels have been cast so far on the Shore, that when the Storm was over, they have been from Twenty to Thirty Yards dry from the Wash of the Shore, and the Vessels set whole ; and by this Means the Lives of those that were in those Vessels were saved. But I, finding that if a Man keeps his Ship sailable, with good store of Ballast, his Ports well Barr'd and Calked, his Top-Masts down, and his Tops too, if he have time, his Yards a-Port lac'd, or long Ships, keeping secure his Doors and Windows of his Shipp, and she will lye as well as in other Storms ; and they may, having their Ships in a readiness, stay in the Road till the Storm begins, which is always first at North, so to the North-West, till he comes round to the South-East, and then his Fury is over. So with the North Wind they may run away to the South, to get themselves Sea-room, for drift of the South-west Wind, where he blows very fiercely ; by these Means, I have, by God's Blessing, preserved myself in Two Hurricanes at Sea, and in Three at Shore, and I have had great Advantages by it.

For

For in those at Sea I lost not a Sail, Yard, or Mast ; they being two great Hurricanes. And in the Year 1667. I being a-shore at *Nevis*, there was a Hurricane on the 19th Day of *August* ; and Fourteen Days before, I did take notice of the foregoing Signs, on a Full Moon ; and I acquainted Sir *John Berry*, who was Commander of his Majesty's Ship, *Coronation*, and several other Commanders there ; who did make their Ships ready for the Sea ; and in the Morning about Four of the Clock, the Wind coming hard Northerly, they put to Sea ; and by God's Blessing, came all back, in Four or Five Days time, safe to the Road again, to the great Admiration of the *French*, then our Enemies ; insomuch that I was told, that a Capucin Fryar, in his Sermon to the *French*, after the Hurricane, should use this Expression : ' You ' may now see your Wickedness, in Praying for a Hurricane to destroy the *English* Fleet, when you see they ' are all come back safe ; and we have not a House left ' to serve God in, nor for our own Convenience, nor ' Forts nor Amunition left to defend our selves against ' these preserv'd Enemies. And the Governor of *Nevis*, and Planters, were for perswading the Commanders of the Ships to stay, and not regard my false Prophecies, as they call'd it, they being very much offended with me for giving Sir *John Berry* this Counsel ; insomuch that when Sir *John Berry* returned back from the Hurricane, I was the first that went aboard him, where he saluted me with many Thanks, and likewise used this Expression ; Is the old Governor's House down as well as the rest ? I told him, It was down to the Ground. I am not sorry, said he, for him, for he would not believe it had been a Hurricane else ; though he was sorry to see the great Destruction it had made on the Shore.

The Second Benefit I found by Experience, on the Shore, was in this Year, 1667. That in the Store-house where I kept the Regiment's Amunition and Cloathes, I had a good Quantity of my Lord *Willoughby's* Sugars, and my own; and I did, on the Confidence I had of the Hurricane's coming, with my Negroes, roll all my Sugars on Mafts of Ships, with high Clogs under my Mafts, and made Gutters for the Water to run away underneath, I being assured of the great Quantities of Rain that falls in this Storm; and on my Planchant over the Sugars I did lay all the Bundles of Soldiers Cloathes, and the Barrels of Powder on that; and then I laid all the Match on the Powder, and four or five Sails over the Match; the Clews of the Sails I spik'd all down to the Timbers: so that when the Hurricane had carried away the Roof of the House; yet my Sugars and Goods remained all safe, that I lost but one Hogthead of Sugar, and that stood a-head open, by the Neglect of my Servants, where some small Water got into it. And this I have put down that others that live in those Parts may prevent those great Damages they run, by taking some Care beforehand; if they did observe those Prognosticks, and follow my Example.

Lastly, Reasons and Causes of these Hurricanes, according to Experimental Observations of my Time.

This is so difficult a Matter, that I do expect great Objections thereto; but I shall raise some my self, and answer them, leaving the rest to better Judgments.

It is not unknown to all Men of Experience, that to the Southward of the Tropicks there is constantly a Trade-Wind, or Easterly Wind, which goes from the North to the South-East all the Year about; except where there are Reversions of Breezes, and In-Letts
near

near the Land ; so that when this Hurricane, or rather Whirl-Wind, comes in Opposition to the constant Trade-Wind, then he pours down with that Force and Violence, that it exceeds all Storms of Wind in the World, and, as I have said before, nothing can withstand him ; for he takes Trees away by the Roots, and those that are extraordinarily strong rooted, he twists off in the Middle : That in the Hurricane in 1667. at *Nevis*, I saw the high Mountain that was all green with Trees, left in most places bare, and the Wood lying in such a Condition, with half Trees, or Stumps, or quarters, that one would think it almost incredible. Many other Stories of Truth I could relate, as to this ruinous Storm ; but it will be too tedious : So I shall leave it to others Relation, and go on with the matter in hand, to shew the Cause of these violent Storms, according to my best Judgment and Experience.

First, It is remarkable by all Men that have been in those Parts, where the Sun comes to a *Zenith*, that at his approach towards the *Zenith*, there is always fair Weather ; But at his return to the Southwards, it occasions off the North Parts of the *Equinoctial*, generally much Rains and Storms, as Tornadoes, and the like ; which makes the Wind in the Tornadoes to come on several Points. But before it comes it calms the constant Easterly Winds ; and when they are past, the Easterly Wind gathers Force again, and then the Weather clears up fair : and this I mention to come the more clearly to my Discourse of the Cause of Hurricanes.

Secondly, The Wind being generally betwixt the *Tropicks* and the *Equator* Easterly, unless at such times as before declared ; meeting with the Opposition of these Hurricanes, which comes in a contrary Course to that Trade-Wind, as is generally called by Navigators doth cause this violent Whirl-Wind, on the Sun's leaving the
Zenith

Zenith of *Barbadoes*, and those adjacent Islands; by which the Easterly Wind doth much decay of his Strength: and then the West Wind, which is kept back by the Power of the Sun, doth with the greater Violence and Force pour down on those parts where he encroaches. And it is usual in our sailing from *Barbadoes*, or those Islands to the North, for a Westerly Wind, when we begin to lose our Easterly Wind, to have it calm, as it is before Hurricanes: And then the Wind springing up, causeth it, till it comes well settled, to be various, but after the settled Westerly Wind comes fresh, we have been constantly without those Shufflings from Point to Point. Here is to be observed, that all Hurricanes begin from the North to the Westward, and on those Points that the Easterly Wind doth most violently blow, doth the Hurricane blow most fiercely against it; for from the NNE. to the ESE, the Easterly Wind bloweth freshest; so doth the W.NW. to the SSW. in the Hurricane blow most violent; and when he comes back to the SE. which is the common Course of the Trade-Wind, then he ceaseth of his Violence, and so breaks up.

So, with Submission to better Judgments, I take the Cause of Hurricanes to be the Sun's leaving the *Zenith* of those Parts towards the South. And *Secondly*, the Reverse or Rebounding back of the Wind, which is occasioned by the calming of the Trade-Wind.

But it will be objected, Why should not this Storm be all over those Parts of the *West-Indies*, as well as *Barbadoes* and the Leeward-Islands?

To which I answer, That it hath in about Twenty-five Years of my Experience, taken its Course from *Bermudoes*, or *Summer Islands*, to the *Caribee-Islands*; but seldom or never doth he carry such a Breadth as from the Latitude of Sixteen to Thirty-two Degrees, which is the Latitudes of the one and other Places; but it hath
been

been observed, that when Hurricanes have been in *Martinico*, which is within Two Degrees of Latitude, and Two Degrees of Longitude, according to the Miles of that Circle, yet no Hurricane hath been in *Barbadoes*; Nor could I ever call any of the former Storms at *Barbadoes* Hurricanes, till that last Year in 1675. Again it hath been noted, that Hurricanes have done the like to the Northwards:

For when the Hurricane hath been in *Antegoa* and *St. Christophers*, those Ships that were but in the Latitude of Twenty Degrees had no Hurricane, but constant Westerly Winds, reasonable fair, and then there were no Hurricanes in *Bermudos*; and when the Hurricanes were at *Bermudoes*, the Leeward or *Caribee Islands* had no Hurricane; nor had those Islands the Hurricane when *Barbadoes* had it.

Now it will be objected, Why the Hurricane was never known to go farther to the Westward than *Porto Rico*, which lies in or near the Latitude of those Islands of *St. Christopher's*?

To this I answer, That from *Porto Rico*, Downwards, both that Island as well as *Hispaniola*, and other Islands there adjacent, are of vast Greatness and very high Lands, that of themselves doth most commonly give Reversal or Westerly Winds at Night, through the Year; For there, for the Reasons aforesaid, the Easterly Wind, towards Night doth calm, and those Lands afford a Land-Wind, which the other Islands cannot do, by reason of the Smallness of those *Caribee-Islands*; but very near the Shoar, the Trade-Wind having his full Power till this general Whirl-Wind comes, for the Reasons aforesaid.

I do imagine so likewise to the Southwards of *Barbadoes*, where the Tornadoes come frequently, there is no Hurricanes; neither was there at *Barbadoes*, when these Tornadoes did commonly come there, which made some
small

small Reversal, though it was but for Two or Three Hours: Yet the Easterly Wind, giving some Way by the Sun's declining from that *Zenith*, doth prevent this furious Reverse, where it hath no Vent till by the Violence of the Two Winds it is forc'd.

I could say something more as to the Storms to the South part of *America*, when the Sun declines from them to the North; but shall leave it to others of more Experience in those parts, I having been but once there.

And I could say something of the Cause of the uncertain Rules for the Currents in the *West-Indies*, but for fear of being too tedious, will make an end.
